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Abbreviations

AID Autoimmune disease

ANA Antinuclear antibody.

ARD Asbestos related disease

ENA Extractable Nuclear Antigen.

RF Rheumatoid Factor.

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ABSTRACT

Systemic autoimmune responses are associated with certain environmental exposures, including crystalline particles such as silica. Positive antinuclear antibody (ANA) tests have been reported in small cohorts exposed to asbestos, but many questions remain regarding the prevalence, pattern, and significance of autoantibodies associated with asbestos exposures. The population in Libby, Montana, provides a unique opportunity for such a study, due to both occupational and environmental exposures that have occurred as a result of the mining of asbestos-contaminated vermiculite near the community. As part of a multi-facetted assessment of the impact of asbestos exposures on this population, this study explored the possibility of exacerbated autoimmune responses. Age and sex-matched sets of 50 serum samples from Libby and Missoula MT (unexposed) were tested for ANA on HEp-2 cells using indirect immunofluorescence (IIF). Data included frequency of positive tests, ANA titers, staining patterns, and scored fluorescence intensity, all against known controls. Serum IgA, rheumatoid factor (RF), and antibodies to extractable nuclear antigen (ENA) were also tested. The Libby samples showed significantly higher frequency of positive ANA and ENA tests, increased mean fluorescence intensity and titers of the ANAs, and higher serum IgA, compared to Missoula samples. In the Libby samples, positive correlations were found between ANA titers and both lung disease severity and extent of exposure. The results support the hypothesis that asbestos exposure is associated with autoimmune responses, and suggests that a relationship exists between those responses and asbestos-related disease processes.